

CLAIMS

1. A method of preparing a foodstuff, comprising the steps of:
 - (a) obtaining a selected foodstuff; and
 - 5 (b) adding isolated oil body associated protein to the foodstuff, wherein the consumption of an effective amount of the foodstuff decreases the serum cholesterol of a subject in need thereof.
2. The method of claim 1, further comprising adding at least one compound selected from the group consisting of a saponin, a phytoestrogen, a phospholipid, and a carbohydrate 10 substantially resistant to digestion.
3. The method of claim 1, wherein the oil body associated protein comprises lipoproteins.
4. The method of claim 1, wherein the oil body associated protein comprises oleosin.
5. The method of claim 1, wherein the foodstuff is soy-based.
6. The method of claim 1, wherein the foodstuff lacks oil body associated body protein prior 15 to the step of adding.
7. The method of claim 1, wherein the foodstuff comprises oil body associated protein prior to the step of adding.
8. The method of claim 5, wherein the foodstuff is selected from the group consisting of soy flour, soy grit, soy meal, soy flakes, soy milk powder, soy protein concentrate, soy protein isolate 20 and isolated soy polypeptide.
9. The method of claim 8, wherein the soy protein isolate is a high molecular weight fraction of a soy material treated with a protease.
10. The method of claim 8, wherein the isolated soy polypeptide comprises β -conglycinin, or a fragment thereof.
- 25 11. The method of claim 8, wherein the isolated soy polypeptide is glycinin, or a fragment thereof.
12. A composition for treating or preventing hypercholesterolemia comprising:
 - (a) glycinin and/or β -conglycinin, or fragments thereof; and

(b) oil body associated protein, wherein the glycinin and/or β -conglycinin and the oil body associated protein are present in an amount effective to provide a synergistic effect for the treatment or prevention of hypercholesterolemia in a subject in need thereof.

5 13. The composition of claim 12, wherein the glycinin or β -conglycinin is at least partially hydrolyzed by an enzyme or a mixture of enzymes.

14. The composition of claim 12, defined as comprising glycinin, or fragments thereof, and purified oil body associated protein.

15. The composition of claim 12, defined as comprising β -conglycinin, or fragments thereof, and purified oil body associated protein.

16. The composition of claim 12, wherein the composition comprises from about 1% to about 5% oil body associated protein.

17. The composition of claim 12, wherein the composition comprises from about 5% to about 10% oil body associated protein.

15 18. The composition of claim 12, wherein the composition comprises greater than about 10% oil body associated protein.

19. The composition of claim 12, wherein the composition comprises about 30% to about 50% oil body associated protein.

20. The composition of claim 12, further comprising at least one additive compound, wherein the additive compound is selected from the group consisting of a saponin, a phytoestrogen, a phospholipid, and a carbohydrate substantially resistant to digestion.

21. The composition of claim 20, wherein the phytoestrogen comprises an isoflavone.

22. The composition of claim 21, wherein the isoflavone is selected from the group consisting of genistein, diadzein, equol, biochanin A, formononetin, and their respective naturally occurring glucosides and glucoside conjugates.

25 23. The composition of claim 20, wherein the carbohydrate is selected from the group consisting of high amylose starch, oligofructose, and soy cotyledon fiber.

24. The composition of claim 20 wherein the phospholipid is selected from the group consisting of lecithin, lyso-lecithin, and lecithin with a modified fatty acid composition.

25. The composition of claim 20, wherein the saponin is selected from the group consisting of soy saponin A, saponin B, saponin E, sapogenol A, sapogenol B, and sapogenol E.

26. The composition of claim 20, wherein the oil body associated protein comprises lipoprotein.

5 27. The composition of claim 26, wherein the lipoprotein is a mammalian lipoprotein, egg yolk lipoprotein or fat globule membrane protein.

28. The composition of claim 20, wherein the isolated oil body associated protein is oleosin.

29. The composition of claim 20, wherein the isolated oil body associated protein is the low molecular weight fraction of oleosin.

10 30. The composition of claim 20, wherein the oil body associated protein comprises a polypeptide fragment containing an amphipathic sequence.

31. The composition of claim 12, wherein the glycinin is the basic subunit of glycinin.

32. The composition of claim 31, wherein the basic subunit of glycinin is the B-1b subunit.

33. The composition of claim 12, wherein the β -conglycinin is the α' subunit or a fragment 15 thereof.

34. The composition of claim 12, further defined as comprising more than 40% β -conglycinin or a fragment thereof.

35. The composition of claim 12, further defined as comprising one or more polypeptide sequences selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, 20 SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:9, SEQ ID NO:10 and SEQ ID NO:11.

36. A method for the treatment or prevention of hypercholesterolemia, comprising the steps of:

25 (a) adding oil body associated protein to a selected foodstuff; and

(b) providing the foodstuff to a subject in need thereof in a quantity sufficient to treat or prevent hypercholesterolemia.

37. The method of claim 36, further comprising adding at least one compound to the foodstuff selected from the group consisting of a saponin, a phytoestrogen, a phospholipid, and a carbohydrate substantially resistant to digestion.

38. The method of claim 36, wherein the oil body associated protein comprises lipoproteins.
39. The method of claim 36, wherein the oil body associated protein comprises oleosin.
40. The method of claim 36, wherein the foodstuff is a soy-based.
41. The method of claim 36, wherein the foodstuff lacks oil body associated body protein prior to the step of adding.
- 5 42. The method of claim 36, wherein the foodstuff comprises oil body associated protein prior to the step of adding.
- 10 43. The method of claim 42, wherein the foodstuff is selected from the group consisting of soy flour, soy grit, soy meal, soy flakes, soy milk powder, soy protein concentrate, soy protein isolate and isolated soy polypeptide.
44. The method of claim 43, wherein the soy protein isolate is a high molecular weight fraction of a soy material treated with a protease.
45. The method of claim 43, wherein the isolated soy polypeptide comprises β -conglycinin, or a fragment hereof.
- 15 46. The method of claim 43, wherein the isolated soy polypeptide is glycinin, or a fragment thereof.
47. A method for the treatment or prevention of hypercholesterolemia, comprising administering a pharmaceutical composition comprising a therapeutically effective amount of purified oil body associated protein to a subject in need thereof.
- 20 48. The method of claim 47, wherein the pharmaceutical composition is administered as a pill or capsule.
49. The method of claim 47, wherein the pharmaceutical composition is administered as a nutritional supplement.
50. The method of claim 47, wherein the cardiovascular disease is prevented by decreasing the concentration of total serum cholesterol.
- 25 51. The method of claim 50, wherein serum cholesterol concentration is lowered by decreasing the concentration of low density lipoprotein.
52. The method of claim 50, wherein the serum cholesterol concentration is lowered by increasing the concentration of high density lipoprotein.

53. The method of claim 47, wherein cardiovascular disease is prevented by decreasing the concentration of serum triglycerides.

54. The method of claim 47, wherein cardiovascular disease is treated by lowering the concentration of liver cholesterol.

5 55. A polypeptide having the amino acid sequence of SEQ ID NO:1, or an amino acid sequence having at least 95% sequence homology thereto and having the same biological activity thereof.